PROVISIONAL PATENT

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Blockchain-Based Proof of Gold and Hybrid Monetary System

FIELD OF INVENTION

This invention relates to blockchain technology, physical asset verification, and financial systems. Specifically, it provides a novel method for integrating gold-backed transactions on the blockchain, verifying the physical presence of gold in real-time, and introducing a new hybrid monetary system combining the properties of physical gold and cryptocurrency.

BACKGROUND OF THE INVENTION

Gold has historically been a trusted store of value and a foundation for monetary systems. However, the lack of transparency in verifying physical gold and securely linking it to digital transactions has hindered its integration into modern decentralized finance. Cryptocurrencies like Bitcoin provide transparency and decentralization but lack intrinsic backing by physical assets, leading to high volatility and skepticism as a stable store of value.

This invention addresses these issues by creating a blockchain-based proof-of-gold mechanism. It ensures the physical presence of gold through two complementary verification methods: constant connection to blockchain transactions using a private key secured in the gold unit, and on-demand material verification using electromagnetic and ultrasonic waves. This hybrid approach enables a gold-backed blockchain system that provides the stability and intrinsic value of gold combined with the transparency and efficiency of cryptocurrencies.

Furthermore, this invention solves the problems of achieving true decentralization of gold tokens and creating a robust, eco-friendly, and non-volatile monetary system. By combining physical gold with blockchain technology, the system establishes a stablecoin alternative that is both environmentally sustainable and intrinsically valuable.

SUMMARY OF THE INVENTION

The invention provides:

1. **Real-Time Proof of Gold**: A physical gold unit is connected to the blockchain via a hardware device containing a unique undisclosed private key. This key facilitates secure transaction processing, ensuring the unit's connection to blockchain operations.

2. **On-Demand Gold Verification**: Physical gold is tested using random ultrasonic and electromagnetic wave patterns. These tests are analyzed to confirm the material's authenticity, ensuring it responds uniquely as gold.
3. **Dynamic Transaction Limitation**: The total amount of gold available for transactions is dynamically calculated based on the aggregate of all gold currently connected to the system. Users can only purchase gold-backed tokens if the system remains below a predetermined maximum utilization threshold (e.g., 70% of total gold connected). This ensures robustness and prevents over-allocation.
4. **Monetary System with "Mine Coin"**: Users earn Mine Coin, a separate cryptocurrency, by contributing gold units to the system. Mine Coin can be exchanged for profit on external exchanges, incentivizing participation.
5. **Gold Redemption Mechanism**: Users can claim physical gold by generating a private key via their smartphone. This key is securely transmitted to the device using NFC (Near-Field Communication). Users who agree to deliver gold earn extra profit for fulfilling the transaction.
6. **Continuing Earnings During Redemption**: Until the private key is successfully transferred to the device, the device continues to earn Mine Coin for the user. Once the key is transferred, the user receives a reward for completing the transaction.
7. **Fault Tolerance**: If a device is damaged or broken before transferring the private key, mechanisms are in place to ensure the user's holdings and earnings are preserved.
8. **Hybrid System**: The invention bridges the gap between traditional gold-backed systems and cryptocurrencies, combining physical value with the programmability and efficiency of blockchain.
9. **Eco-Friendly Stablecoin**: The system uses physical gold as a foundation for creating an environmentally sustainable stablecoin that avoids the energy-intensive mining of cryptocurrencies like Bitcoin while providing stability against market volatility.
10. **Latency Testing for Real-Time Verification**: Ensures that responses generated by the gold verification device occur in near real-time by accounting for network latencies and incorporating challenge-response timing protocols to prevent tampering.

DETAILED DESCRIPTION

1. Device for Real-Time Connection

The physical gold unit is integrated with a hardware device containing:

1.1 **Private Key Storage**: A tamper-proof module stores the unique private key associated with the gold unit. This private key facilitates blockchain transactions.

1.2 **Cryptographic Engine**: Processes transactions by signing them using the private key. The key is never exposed, ensuring security.

1.3 **Power and Connectivity**: Equipped with wireless charging and internet connectivity (e.g., Wi-Fi, 5G, or satellite) to maintain constant interaction with the blockchain.

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2. On-Demand Gold Verification Mechanism

2.1 **Ultrasonic Testing**: Randomized ultrasonic waves are sent into the material. The reflected wave patterns are analyzed to match the unique response signature of gold.

2.2 **Electromagnetic Testing**: Randomized electromagnetic pulses are sent through the material, and the resulting resonance and conductivity are analyzed.

2.3 **Verification Algorithms**: Machine learning algorithms analyze and confirm the authenticity of the gold based on wave response patterns.

2.4 **Tamper Detection**: Embedded sensors monitor for physical tampering or environmental changes that could compromise the gold unit.

2.5 **Decentralized Verification via Blockchain**: The random ultrasonic and electromagnetic wave patterns used for verification are generated by a smart contract on the blockchain. Multiple gold verification devices process these patterns and submit their responses back to the blockchain. The blockchain compares these responses to ensure they share similarities or are within acceptable noise thresholds, confirming authenticity and reducing errors.

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3. Latency Testing for Real-Time Verification

3.1 **Challenge-Response Timing**:

- Verifiers send randomized challenges (e.g., unique impulse patterns) to the gold verification device.
- The device must generate the response in near real-time and return it to the verifier.
- The verifier calculates the **Processing Time**:

3.2 **Dynamic Network Latency Adjustments**:

- The system uses ping/echo tests to measure real-time network latency.
- Acceptable time thresholds are adjusted dynamically based on latency measurements, ensuring fairness while preventing tampering.

3.3 **Cryptographic Nonce Integration**:

- Each challenge includes a cryptographic nonce that is incorporated into the response.
- This ensures the response could not have been pre-computed.

3.4 **Multi-Validator Timing**:

- Multiple validators independently verify response timing to detect anomalies.
- Any significant deviation in timing patterns across validators indicates potential tampering or forgery.

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4. Blockchain Integration

4.1 **Smart Contracts**: Each gold unit is represented as a token on the blockchain. The token is linked to the private key of the physical gold unit.

4.2 **Dynamic Transaction Limitation**: Smart contracts dynamically limit gold-backed token acquisitions to ensure total transactions do not exceed a defined percentage (e.g., 70%) of the total connected gold.

4.3 **Decentralized Ledger**: Tracks ownership, transactions, and verification status.

4.4 **Transaction Fees**: A percentage of each transaction is distributed among gold owners who provide their units for verification.

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5. Monetary System with "Mine Coin"

5.1 **Earnings Mechanism**: Users earn Mine Coin by connecting their gold devices to the system. Mine Coin can be traded on cryptocurrency exchanges for profit.

5.2 **Staking Rewards**: Users earn additional Mine Coin by participating in network operations, such as gold verification and maintaining system robustness.

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6. Gold Redemption Process

6.1 **Private Key Transfer**: To claim physical gold, a user generates a private key on their smartphone. This key is securely transmitted to the gold device via NFC.

6.2 **Delivery Incentives**: Users agreeing to deliver the claimed gold earn extra rewards, incentivizing efficient and transparent gold delivery.

6.3 **Earnings Continuation**: The gold device continues to earn Mine Coin until the private key is successfully transferred.

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7. Failure Mitigation

7.1 **Fault Tolerance**: In cases where the device is damaged or broken before transferring the private key, the system ensures the user's Mine Coin earnings and gold-backed holdings are not lost. Mechanisms for dispute resolution and compensation are integrated into the blockchain.

CLAIMS

1. Device Claims
A hardware device integrated with a physical gold unit, containing:

- Private Key Storage
- Cryptographic Engine
- Tamper Detection
- Power and Connectivity

2. Verification Claims
Includes:

- Ultrasonic and electromagnetic wave analysis
- Randomized impulse patterns
- Real-time latency testing

3. Blockchain Claims

- Representation of physical gold as tokens
- Decentralized verification mechanisms
- Dynamic transaction limitation

4. Monetary System Claims

- Mine Coin earnings and staking rewards
- Gold redemption via private key transfer and incentives

5. General Claims

- A hybrid monetary system combining the properties of physical gold and cryptocurrency.
- The system of claim 19, wherein it addresses common issues of volatility, trust, and transparency in traditional and digital financial systems.
- A system of claim 19, wherein the monetary system is environmentally sustainable and avoids energy-intensive mining processes.

POTENTIAL APPLICATIONS

1. **Global Payments**: Stable, gold-backed transactions for international trade.
2. **Investment**: Gold owners earn returns by integrating their units into the network.
3. **Decentralized Banking**: Individuals can use gold-backed tokens as savings, bypassing traditional banks.
4. **Monetary Policy**: A decentralized alternative to fiat currencies and cryptocurrencies.
5. **Eco-Friendly Stablecoin**: Provides a robust and sustainable alternative to existing stablecoins.
6. **Supply Chain Management**: Verifiable gold-backed tokens ensure transparency and trust in gold sourcing and logistics.
7. **Digital Gold Standard**: Establishes a digital equivalent to the historical gold standard for monetary systems.
8. **Disaster Recovery**: Provides a reliable store of value in economically unstable or inflation-prone regions.
9. **Smart Contract Collateral**: Enables the use of gold-backed tokens as secure collateral in decentralized finance (DeFi) applications.
10. **Luxury Asset Management**: Allows fractional ownership and trading of gold assets for collectors and investors.